



# Statewide Rail Capacity and System Needs Study Overview, Approach and Products

*presented to*  
**Washington State  
Transportation Commission**

*presented by*  
**Cambridge Systematics, Inc.  
Berk & Associates, Inc.  
Global Insight, Inc.  
HDR, Inc.  
Starboard Alliance Company  
Transit Safety Management  
Willard F. Keeney & Associates**

**January 17, 2005**

# Presentation Agenda

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- Objectives of study and key challenges
- Introduction to the team
- Overview of study approach and key elements of methodology
- Tasks, products, and schedule
- Discussion and detailed explanation of tasks (as needed)

# Study Objectives

- **Support the Washington State Transportation Commission in –**
  - **Assessing the rail freight and rail passenger infrastructure needs in this state**
  - **Reviewing the current powers, authorities, and interests the state has in both passenger and freight rail**
  - **Recommending public policies for state participation and ownership in rail infrastructure and service delivery, including but not limited to planning and governance issues**
  - **Developing a rail asset management plan, and**
  - **Reporting their findings and conclusions of this study to the transportation committees of the legislature by December 1, 2006**

# Challenges

- **Consensus** on policy objectives (not just B/C ratios and financing)
- Comprehensive **assessment** of benefits, costs and risks
  - Public and private
  - Freight and passenger
  - National, regional, state and local
  - Equitable treatment of communities and industry sectors
- Effective **stakeholder** engagement
  - Roles and responsibilities
  - Appropriate incentives
  - Effective mix of policy tools

# Consultant Team

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- **Cambridge Systematics, Inc. – Lance Grenzeback, Mike Fischer**
- **Berk & Associates, Inc. – Bonnie Berk**
- **Global Insight, Inc. – Joe Bryan, Paul Bingham**
- **HDR, Inc. – Wayne Short**
- **Starboard Alliance Company – Monica Isbell**
- **Transit Safety Management – Tom White**
- **Willard F. Keeney & Associates – Willard Keeney**

# Approach

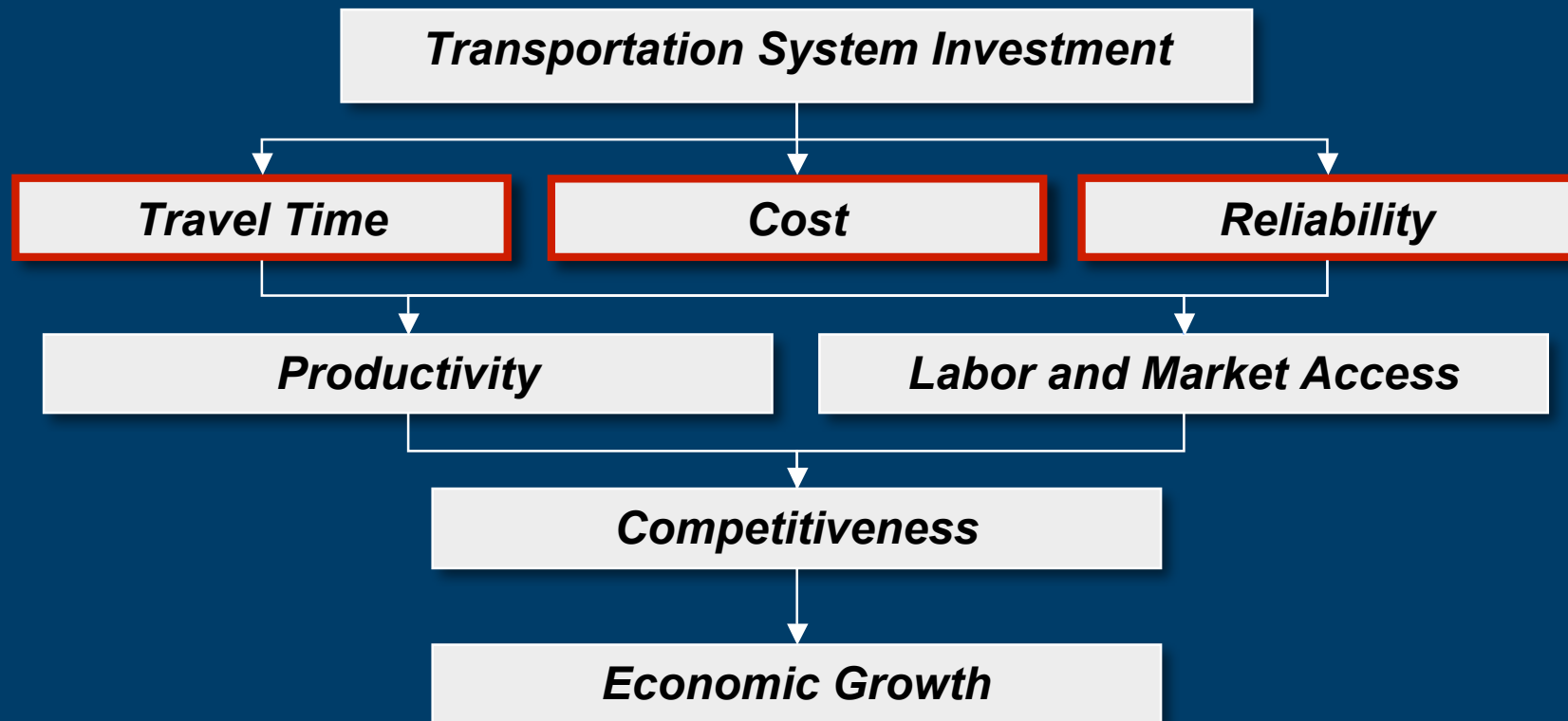
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- What do we mean by the **public benefits** of state investment in rail improvements?
- How do you assess **rail system improvements**?
- How do you build clear, comprehensive, and practical **state policies and programs**?

# Public Benefits

- What do we mean by the **public benefits** of state investment in rail improvements?

# Linkage Between Transportation Investment and Economic Development

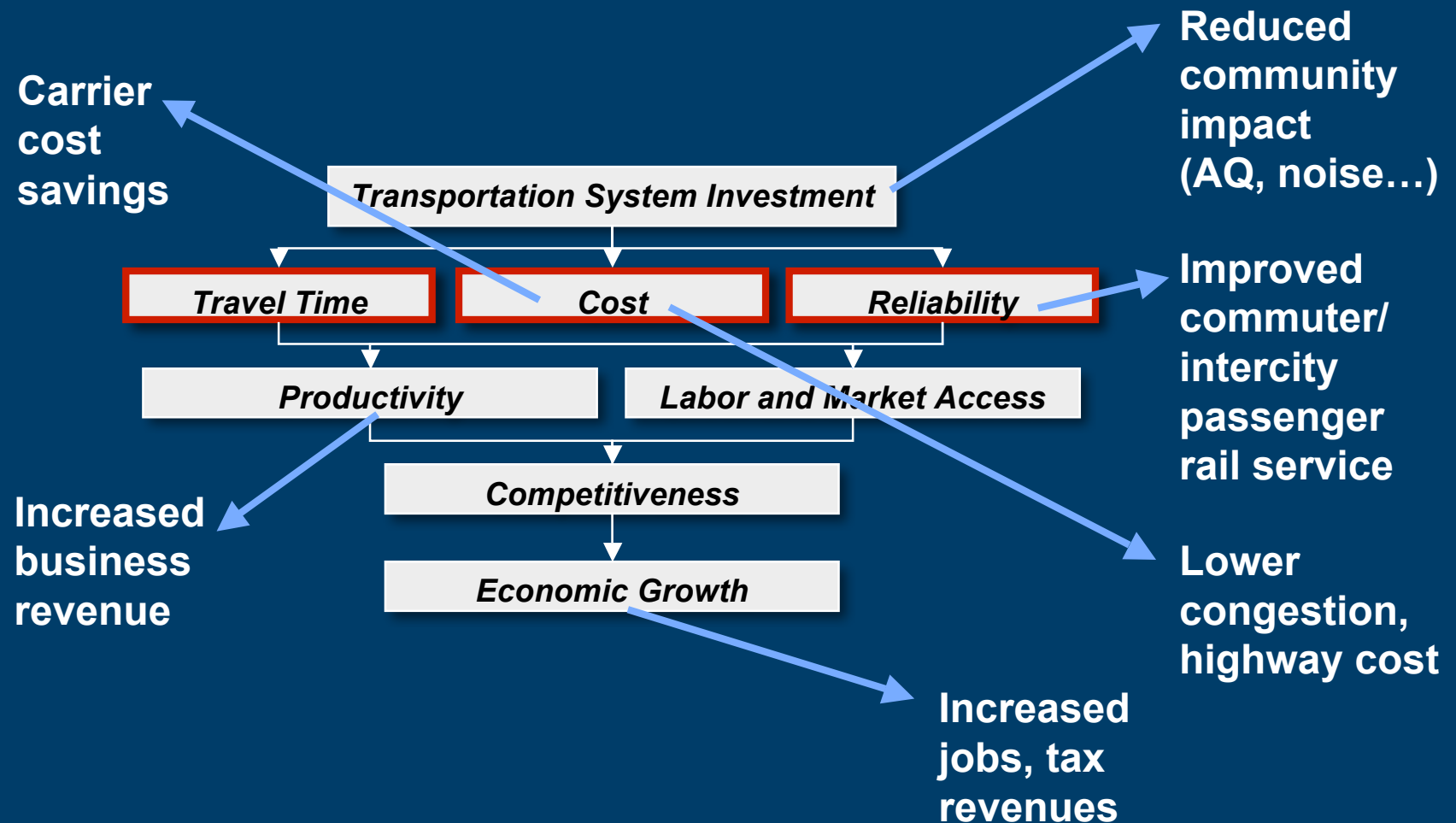




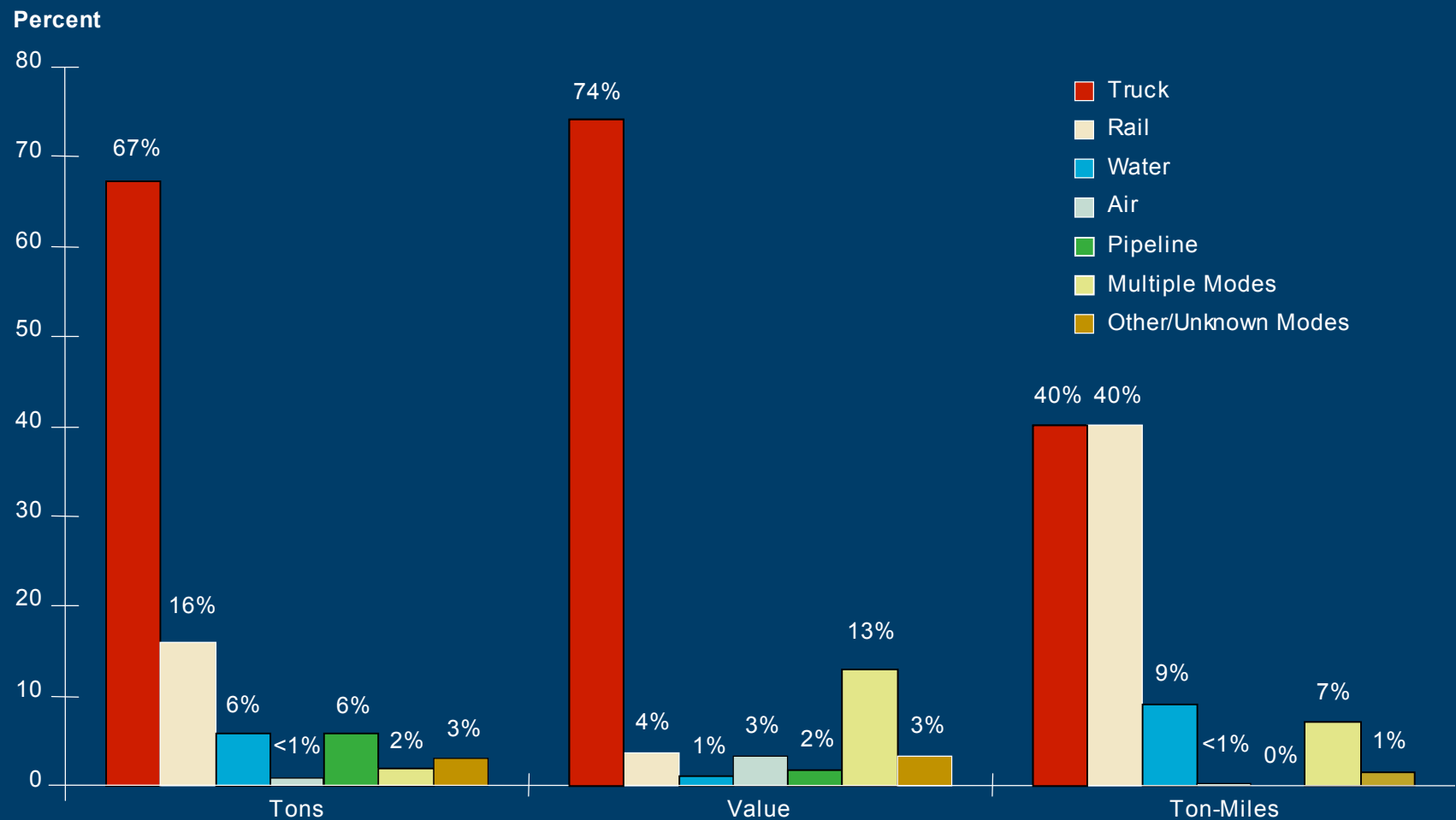
# Public and Private Benefits of Transportation Investment

## Private Sector Benefits

## Public Sector Benefits

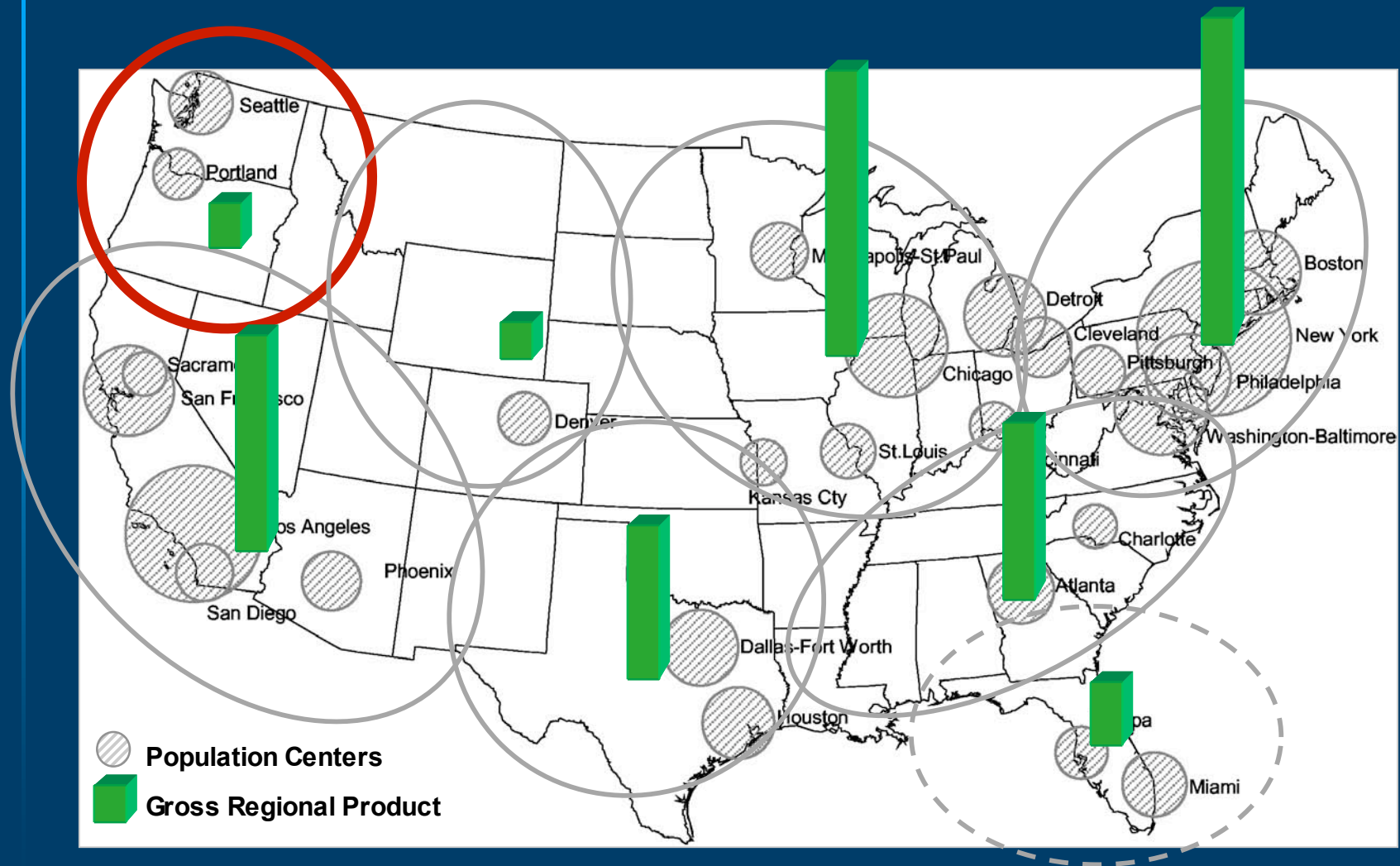


# Freight Tons, Value, and Ton-Miles by Mode, 2002



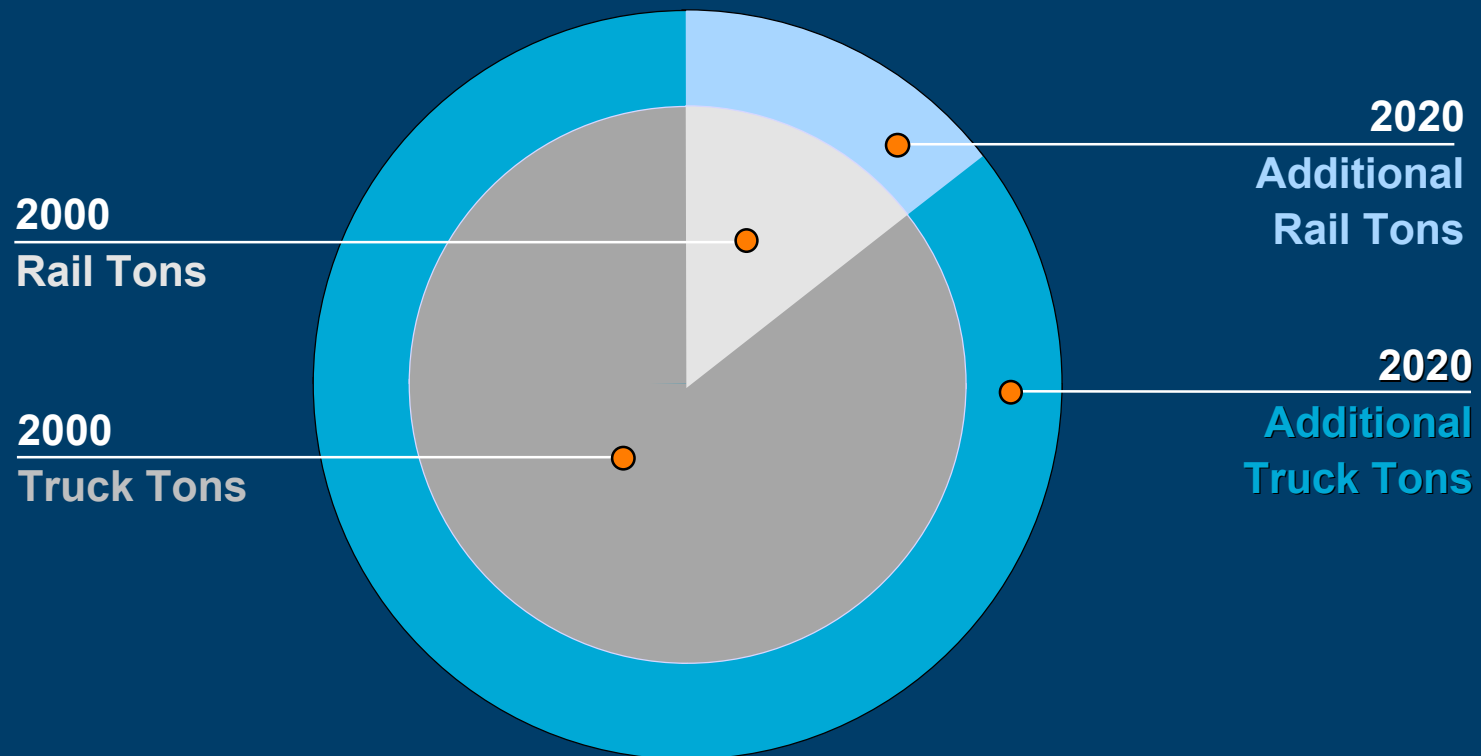
Source: Bureau of Transportation Statistics and U.S. Census Bureau, "2002 Economic Census, Transportation, 2002 Commodity Flow Survey," Table 1b.

# Gross Regional Products of Eight U.S. Trade Blocs and Major Population Centers



# Freight System Capacity

Do the highway and freight-rail systems have the capacity to handle the growing volume of freight – even if mode shares remain constant?



# Railroad Industry Return on Investment

## Class I Railroads' ROI is Improving, But Is Still At or Below the Cost of Capital

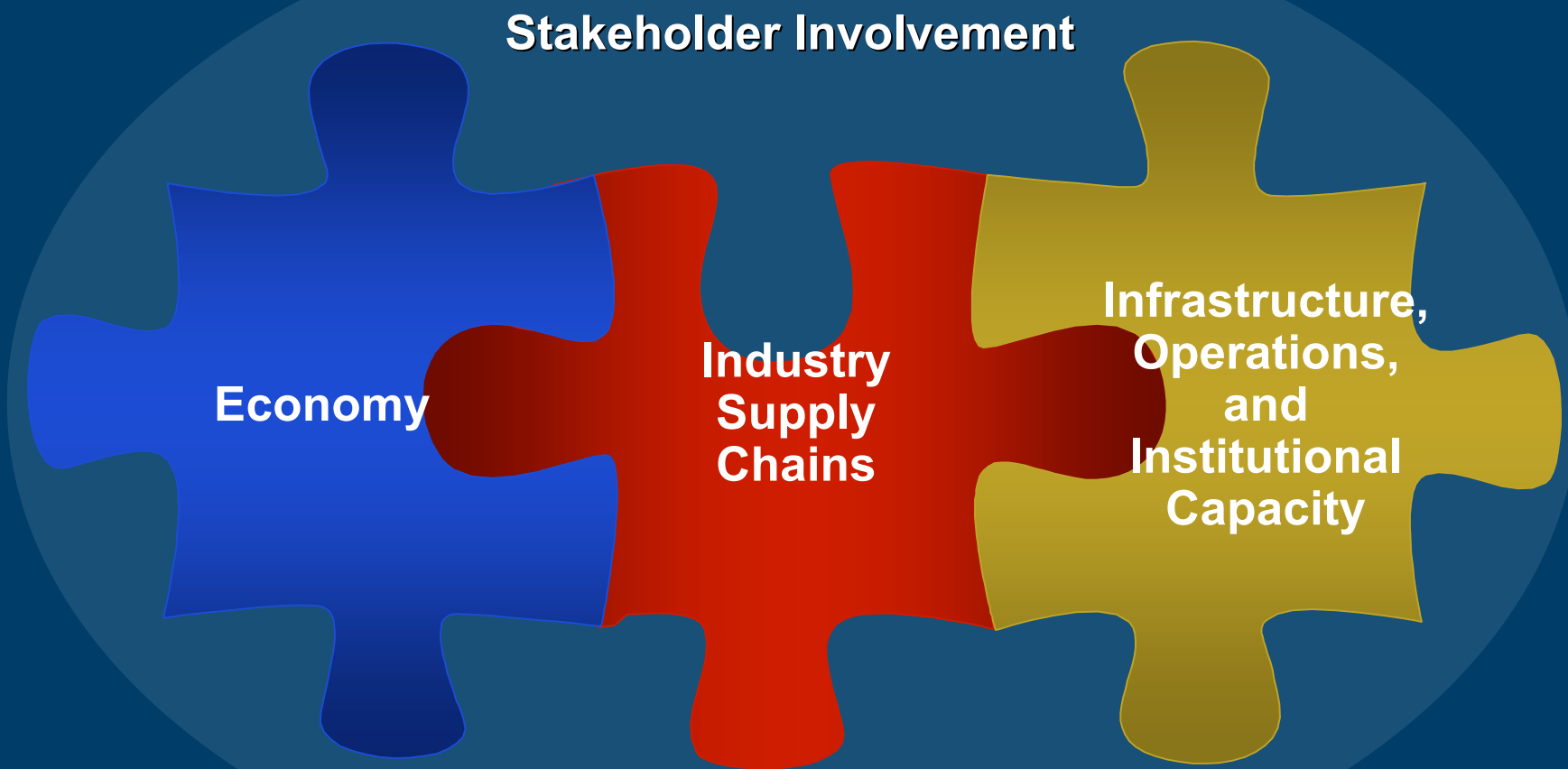


Source: Surface Transportation Board

# Rail Capacity and System Needs

- How do you assess rail system improvements?

# Assessing Rail Capacity and System Needs



# Washington State Economy

## GRP and Growth Rates by Sector, 2000-2025

Sector	2004 GRP \$ Billion	2004 Share of Economy	Average Annual Growth				
			2000-2005	2005-2010	2010-2015	2015-2020	2020-2025
Agriculture	4.6	2.0%	0.0	0.2	-0.2	-0.6	-1.0
Manufacturing	21.8	9.2%	-0.9	0.4	0.1	-0.2	-0.6
Mining	0.3	0.1%	-2.4	0.5	-0.2	-0.7	-1.1
Construction	10	4.2%	-0.2	2.5	2.0	1.7	1.2
Trade, Trans., & Util.	44.2	18.0%	3.7	2.9	2.4	2.1	1.7
Information	22.1	9.3%	2.0	8.9	8.1	8.0	7.0
Financial Activities	49.2	20.5%	3.5	3.0	2.5	2.1	1.6
Prof. & Business Svcs.	26.9	11.1%	4.0	6.2	5.6	5.6	5.0
Educ & Health Svcs	15.8	6.7%	3.8	5.2	4.6	4.5	4.1
Leisure & Hospitality	7.8	3.2%	2.5	4.0	3.7	3.6	3.1
Other Services	5.3	2.1%	2.6	3.2	2.7	2.1	1.7
State & Local Govt.	21.8	9.3%	1.6	1.9	1.6	1.0	0.6
Federal Govt.	6.2	2.6%	3.6	0.4	-0.3	-0.6	-1.2

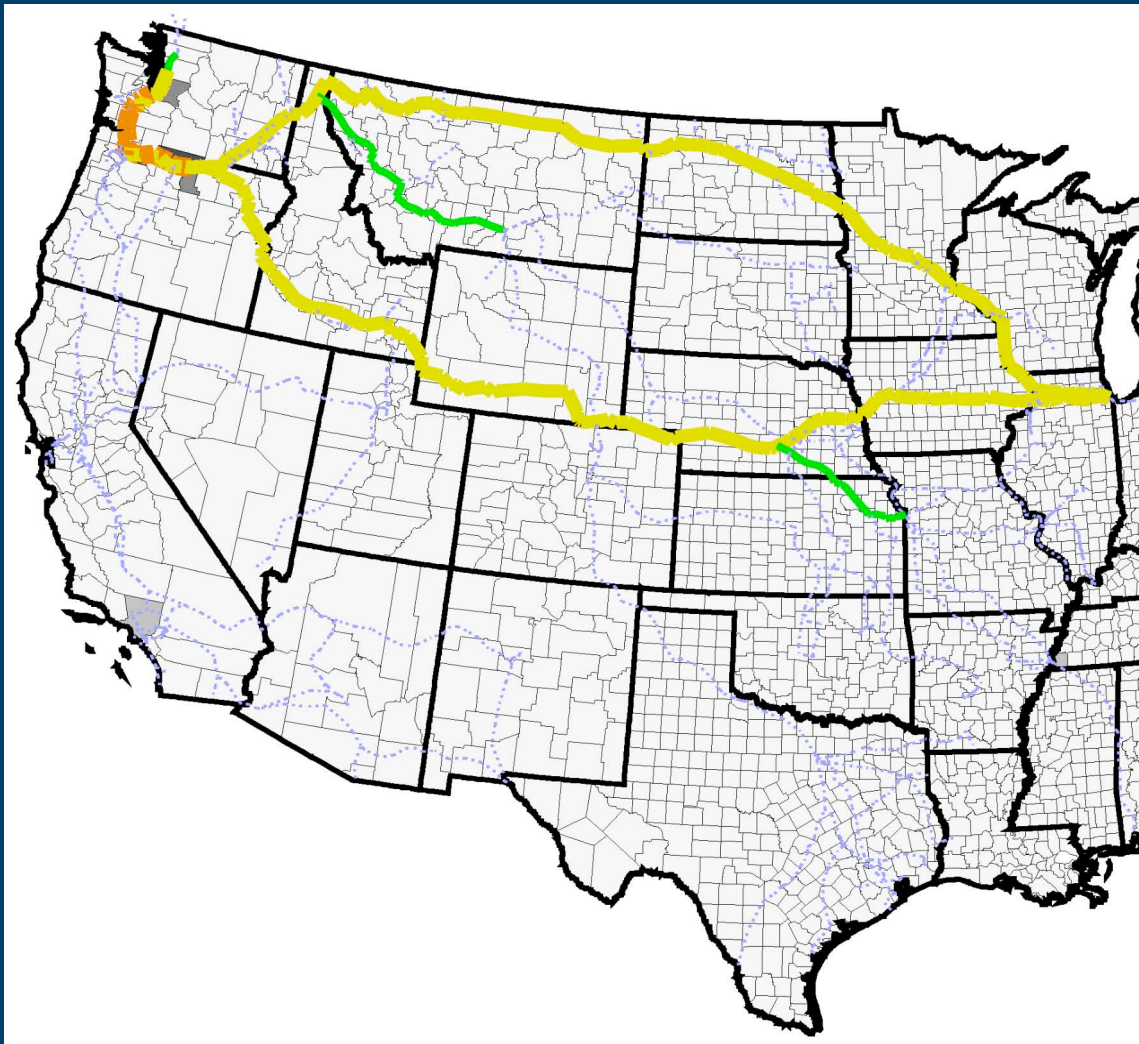


# Role of Rail in the Economy

- **International trade**
  - Seattle/Tacoma discretionary cargo – local and national benefits
  - Columbia River ports – agricultural exports
- **Washington industries reliant on rail**
  - Agriculture and resource industries – Southeast, Columbia Basin, Coastal
  - Central Puget Sound – manufacturers with complex supply chains
  - Vancouver/Portland – national freight distribution
- **Business, commuter, and tourism travel**
  - Puget Sound and I-5 Corridor – alt to congested highways
- **Military mobility**
  - Ft. Lewis – Pacific Northwest Power Projection Platform

# Western United States Origins and Destinations for Distribution and Warehouse Goods Using the Portland-Vancouver Rail Triangle

With Tonnage of Freight on Rail Lines Used to Access Triangle



Origins and Destinations of Distribution and Warehousing Goods Shipped via Portland-Vancouver Rail Triangle, 1998

0 0.05 0.25 1.0 2.5 10



(million tons)

Volume of Distribution and Warehousing Products on Portland-Vancouver Rail Triangle Access Routes, 1998

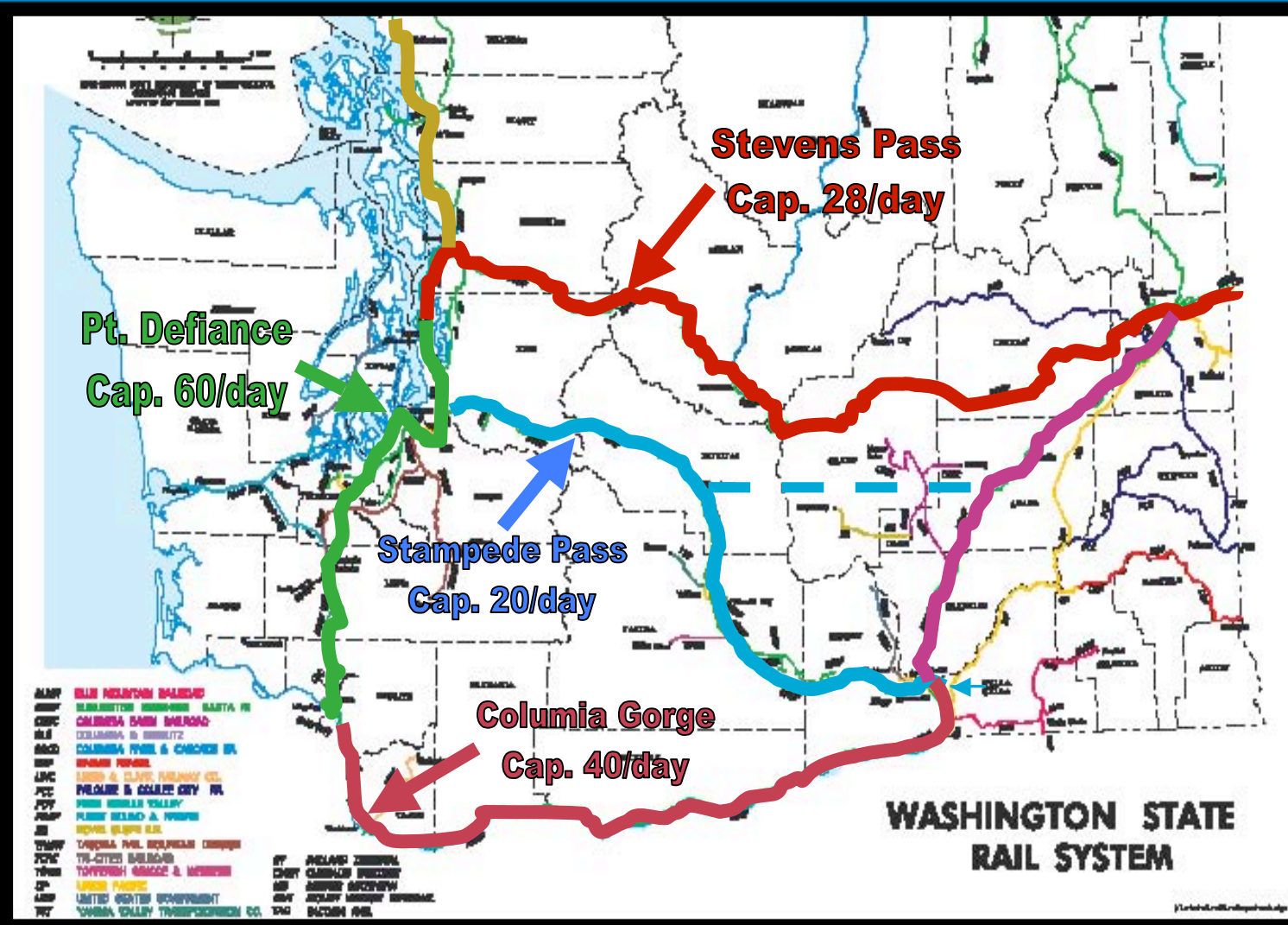
0 0.25 0.75 2.5 5.0 33.0



(million tons)

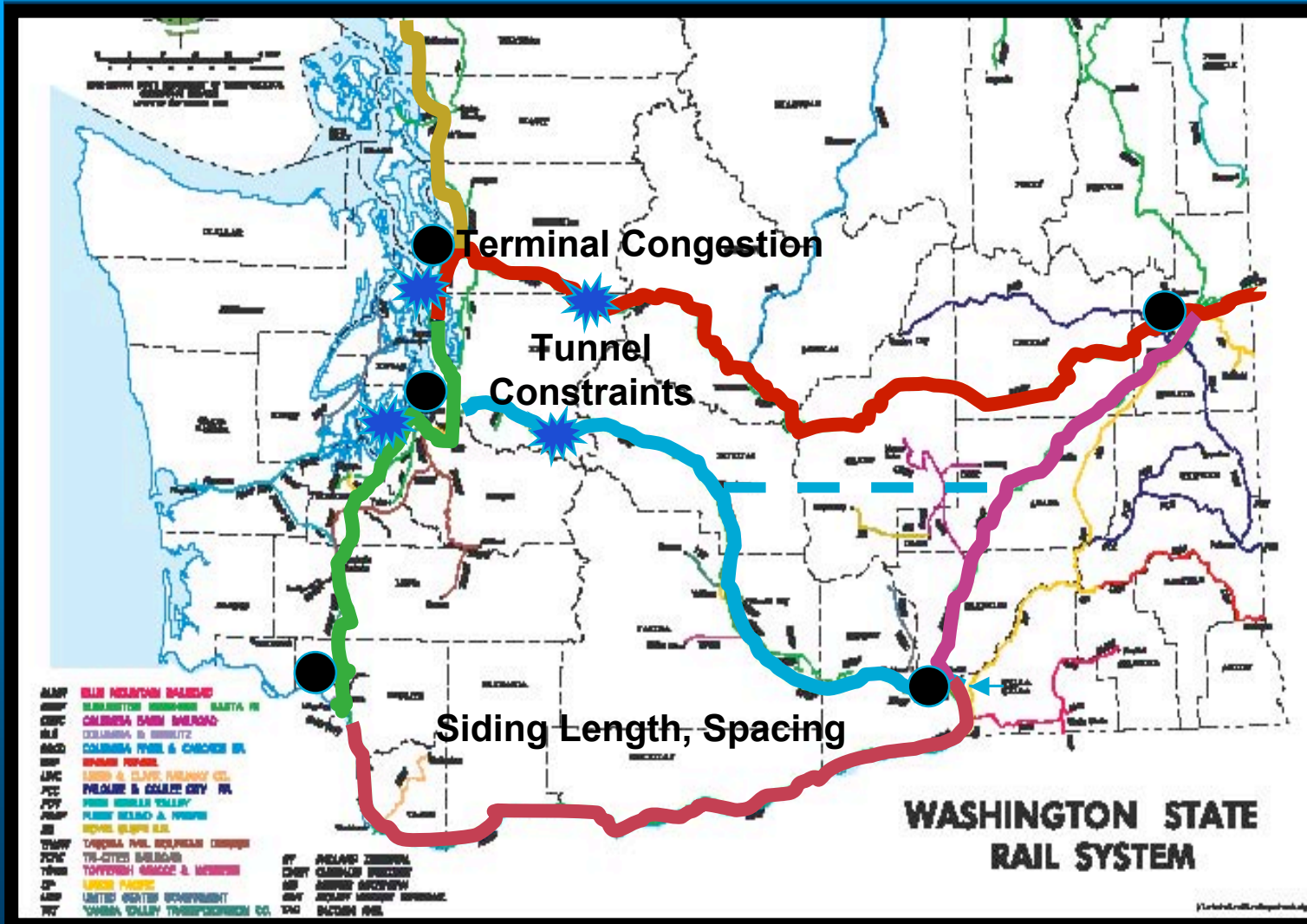
Source: Cambridge Systematics based on  
Global Insight data, 1998

# System Capacity Constraints





# Capacity Bottlenecks



# Operational Issues

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- **Joint UP/BNSF operations Tacoma to Seattle**
- **Bi-directional running Columbia River Gorge**
- **Combined rail corridor Spokane to Sand Point**
- **Directional running Stevens/Stampede Pass**
- **Car supply/service reliability issues**
- **Increasing rates for carload shippers**

# Rail System Stakeholders

## Producers & Suppliers

- Growers (wheat, grain, fruit)
- Forest products (e.g. Longview Fiber, Weyerhaeuser)
- Shippers (e.g. NW Containers)
- Manufacturers
- Major Retailers

## Railroads

- BNSF
- UP
- Short lines
- Sound Transit
- Amtrak

## Associations

- WA Public Ports Assoc.
- American Short Line & Regional RR Assoc.
- WA Assoc. of Rail Passengers
- WA Wheat Commission
- WA Perishable Shippers Coop. Assoc.

## Ports

- Westside (Seattle, Tacoma, Everett)
- Eastside (Pasco, others)
- Columbia River (Vancouver)

## Cities/Communities

- Eastside
- Westside

## Regional Gov'ts

- RTPOs

## Military

- Fort Lewis, others

## State

- |                        |              |
|------------------------|--------------|
| • Governor's Office    | • Oregon DOT |
| • Legislature          | • FMSIB      |
| • Transportation Comm. | • WA UTC     |
| • WSDOT                |              |

Interest and  
Stake in  
Washington's  
Rail System

# Segmentation Strategy

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- **Private Sector Partners and Investors**
- **State Interests and Investors**
- **Customers and System Users**
- **Regional and Local Interests**

# Outreach Activities

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- Stakeholder interviews and summaries of key findings
- Facilitated regional listening sessions
- Web posting and e-notices to stakeholders of updated web content, including an e-mail address for questions and comments, and
- Transportation Commission Study Group workshops, with opportunities for stakeholder input (Technical Resource Panel)



# State Policies and Programs

- How do you build clear, comprehensive, and practical **state policies and programs**?

# Benefit-Cost and Economic Analysis Elements

- Carrier travel time, cost, and reliability savings
- Shipper cost reductions and logistics improvements
- Highway user impacts (VMT, cost, safety, etc.)
- Highway agency impacts (maintenance, etc.)
- Community impacts (AQ, land use, etc.)
- Economic impacts (industry growth, jobs, tax revenues)

# Investment Analysis Benefit/Cost Calculator



## Florida Department of Transportation

### Freight Rail Investment Calculator

#### Results

#### Summary:

Category	Total	Cost	Public Benefits	B/C	Florida Cost	Florida B/C
All Projects	\$69,339,000		\$286,134,608	4.1	\$39,004,250	7.3
All Projects With B/C $\geq$ 1.0	\$62,839,000		\$284,918,724	4.5	\$35,754,250	8.0
Capital Budget Model Recommended Projects	\$44,339,000		\$248,868,527	5.6	\$26,504,250	9.4

#### Projects:

Name	Railroad	Total Cost	Public Benefits	B/C	Florida Cost	Florida B/C	Model Recommendation
Panama City Port	The Bay Line RR	\$7,339,000	\$83,437,486	11.4	\$5,504,250	15.2	Yes
Double Track MP 20 to MP 30	CSXT	\$10,000,000	\$13,862,633	1.4	\$5,000,000	2.8	No
Repair Bridge #14	CSXT	\$6,500,000	\$1,215,884	0.2	\$3,250,000	0.4	Yes
Upgrade to 286k	Florida Central	\$8,500,000	\$27,232,905	3.2	\$6,375,000	4.3	Yes
Rail Spur to Industrial Park	Florida Midland	\$4,500,000	\$33,786,340	7.5	\$2,250,000	15.0	Yes
Close 5 Grade Crossings	FEC	\$15,000,000	\$23,403,448	1.6	\$7,500,000	3.1	No
Add New Siding	CSXT	\$12,000,000	\$76,928,281	6.4	\$6,000,000	12.8	Yes
Track Rehab on Industrial Lead	Bay Line RR	\$1,500,000	\$13,608,361	9.1	\$1,125,000	12.1	Yes
Double Track 4 Miles	FEC	\$4,000,000	\$12,659,270	3.2	\$2,000,000	6.3	Yes

# Policy Packages

## Example: Mid-Atlantic Rail Operations Program Format

Policy Packages	Beneficiaries		Freight Service			Intercity Passenger Service			Commuter Rail Service			State and Local			Cost	Cost -Benefit	Funding Source											
	Railroads	States	Trip Time	Cost	Reliability	Market	Trip Time	Cost	Reliability	Market	Trip Time	Cost	Reliability	Market	Congstn	AQ	Envrnmnt	Jobs	\$000,000	Public B/C Ratio	Railroads	State Funds	Toll	TIFIA	RIFF	CMAQ	\$130	Port Authority
Policy Programs Projects																												
Policy Programs Projects																												
Policy Programs Projects																												

# Principles for a Rail Policy

- **Public investment for public benefits**
  - Well defined public benefits – costs consistent with benefits
  - Private sector pays fair share
  - Positioning in national programs to pay for national benefits
  - Invest to re-order priorities and change operating strategies
- **Credit enhancement as a means to leverage private investment**
  - Recognizes constraints on railroads return on investment and cost of capital
- **Consideration of economic impacts in addition to public benefits**
- **Cost-effectiveness and multi-modal tradeoffs**

# Study Products

- **Technical memoranda** documenting methods and findings
- **Interim reports** supporting Commission policy deliberations
  - State of System
  - Preliminary Policy Options
- **Final products** reporting recommendations
  - Asset Management Plan
  - Analytical Plan
  - Investment Plan
  - Rail Operations Forum



# Statewide Rail Capacity and System Needs Study

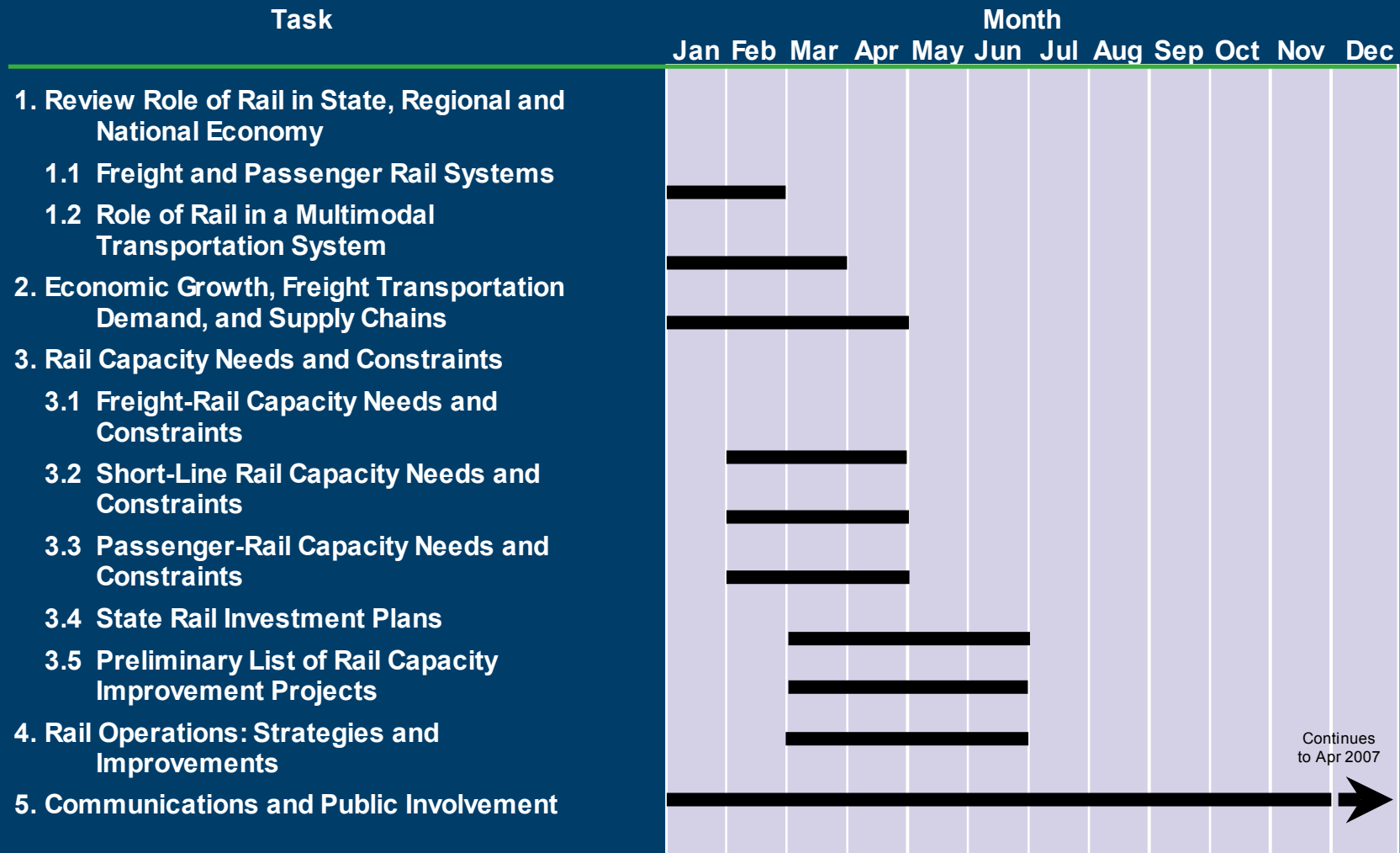
## Tasks, Schedule, and Management

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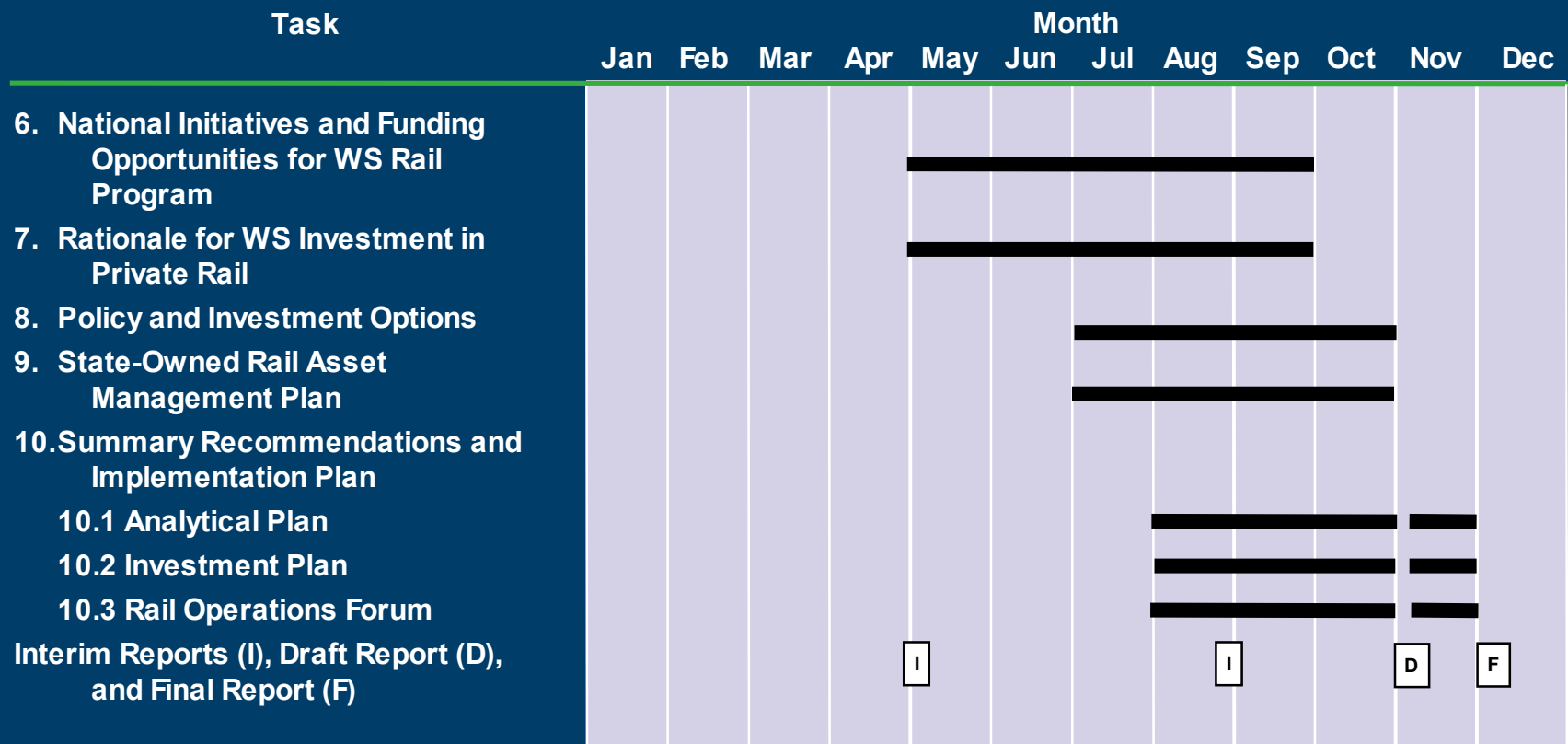
# Statewide Rail Capacity Study Project Schedule





# Statewide Rail Capacity Study

## Project Schedule *(continued)*



# **Task 1 – Role of Rail in the State, Regional, and National Economy**

## **Task 1.1 – Freight and Passenger Rail Systems**

- **Describe status of Washington State's freight- and passenger-rail systems**
  - **Class I, short-line, inter-city passenger, and commuter rail lines and terminals**
  - **Ownership and operating rights, freight and passenger rail services and train volumes, plans of major railroads**
  - **Current government investment, financial trends, status of public-private initiatives, recent legislation**
- **CS with Global Insight and HDR**
- **Tech memo describing supply of freight- and passenger-rail services**

# **Task 1 – Role of Rail in the State, Regional, and National Economy**

## **Task 1.2 – Role of Rail in a Multimodal System**

- **Describe roles, benefits, and costs of freight- and passenger-rail systems for the Washington State, regional, and national economies**
  - **Identify industries dependent on freight- and passenger-rail transportation; output value, employment, growth; market share by mode and industry sector, including volumes of traffic by tonnage and value**
  - **Identify transportation, social, economic, environmental impacts of rail system on communities**
- **CS with Global Insight**
- **Tech memo on demand for rail and rail's impacts**

# **Task 2 – Economic Growth, Freight Transportation Demand, and Supply Chains**

## **Task 2.1 – Economic Growth and Freight Demand**

- **Describe growth trends and structural changes in the state, regional, and national economies that will determine future demand for freight transportation**
  - **Examine recent economic and trade forecasts for Washington State and Pacific Northwest**
  - **Bracket the most likely growth rates and freight forecasts**
  - **Assemble annual forecasts out 10 and 20 years, capturing the path of growth between 2005 and 2025**
- **Global Insight with CS**
- **Tech memo on demand for freight transportation to 2015 and 2025**

# **Task 2 – Economic Growth, Freight Transportation Demand, and Supply Chains**

## **Task 2.2 – Industry Logistics and Supply Chains**

- **Describe how industry logistics strategies and supply chain requirements shape the demand for freight-rail transportation services**
  - **Conduct ~50 interviews with shippers (e.g., importers, exporters, and domestic movers), third-party IMCs, and non-railroad-owning rail service providers**
  - **Conduct ~50 interviews with Class I railroads, short-lines, intermodal marketing companies (IMCs), and dray operators**
- **Starboard Alliance with Global Insight and CS**
- **Tech memo summarizing and mapping logistics strategies and supply chains requirements and constraints**

# **Task 3 – Rail Capacity Needs and Constraints**

## **Task 3.1 – Freight-Rail, Task 3.2 – Short-Line Rail, and Task 3.3 – Passenger-Rail**

- **Identify the institutional, operational, and infrastructure constraints to the efficient movement of freight and passengers over the Washington State rail system**
  - **Identify current and anticipated demand (CS with HDR)**
  - **Determine current and anticipated institutional, operational, and capacity constraints; conduct interviews to verify**
  - **Analyze impact of anticipated increases in freight and passenger train traffic on the identified congestion points**
- **HDR with Transit Safety Management and Willard Keeney**
- **Three tech memos summarizing institutional, operational, and infrastructure constraints**

# **Task 3 – Rail Capacity Needs and Constraints**

## **Task 3.4 – State Rail Investment Plans**

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- **Review and update Washington State's rail investment plans**
  - **Examine the current infrastructure investment plan and supporting model assumptions, including volume and capacity predictions for the Amtrak Cascade effort, etc.**
  - **Recommend options to revise and update the plan**
- **HDR with Transit Safety Management**
- **Updated state investment plan, inputs to study recommendations**

# **Task 3 – Rail Capacity Needs and Constraints**

## **Task 3.5 – Preliminary List of Rail Capacity Improvement Projects**

- **Create preliminary list of rail capacity improvement projects as starting point for assembling and organizing options for 10- and 20-year staged strategic plans**
  - **Develop from prior studies and existing plans (e.g., State Rail Plan) and consultations with other agencies planning public-private investment (e.g., FMSIB), the ports, the Washington Public Ports Association, and key stakeholders**
  - **Sort by type, location, railroad, freight, passenger, jurisdiction, construction period, operational date, sponsor, potential investors, etc.**
- **CS with team**
- **Preliminary list of rail capacity improvement projects**



# Task 4 – Rail Operations: Strategies and Improvements

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- **Identify operation strategies and improvements to increase rail system capacity**
  - Review the business models of the railroads, ports, and regional authorities
  - Determine current operating practices and plans
  - Explore operations strategies and capital investments
- **HDR with Willard Keeney and Transit Safety Management**
- **Tech memo describing operating strategies and issues of the railroads, ports, and regional authorities, and preliminary list of operations improvements**

# Task 5 – Communications and Public Involvement

- **Implement a stakeholder involvement and communications plan that will involve and engage key stakeholders**
  - Stakeholder interviews and summaries of key findings
  - Facilitated regional listening sessions
  - Web posting and e-notices to stakeholders of updated web content, including an e-mail address for questions and comments, and
  - Transportation Commission Study Group workshops, with opportunities for stakeholder input (Technical Resource Panel)
- **Berk & Associates with CS**

## **Task 6 – National Initiatives and Funding Opportunities for WS Rail Program**

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- **Identify national initiatives and funding opportunities for Washington State rail improvement projects**
  - **Leverage ongoing work for the U.S. DOT, the U.S. Chamber of Commerce Transportation Finance Study, AASHTO Freight Bottom Line Campaign project**
- **CS with Global Insight and HDR**
- **Tech memo identifying national initiatives and funding opportunities**

# Task 7 – Rationale for WS Investment in Private Rail

- Define the rationale for public participation in rail improvements and develop a methodology for estimating the benefits, costs, risks, and appropriate level of investment and public participation
  - Establish framework for organizing transportation and economic inputs, and assessing transportation, safety, security, health, environmental and economic impacts
  - Provide methodology and tool (e.g., the freight-rail investment calculator) for evaluating alternative policies and projects under constrained-budget scenarios
- CS with Global Insight, HDR, and Transit Safety Mgt.
- Tech memos on rationale and methodology

## Task 8 – Policy and Investment Options

- **Recommend policy and investment options to improve rail system capacity**
  - Define a range of policy options from limited intervention in a market-driven rail system to extensive intervention in a policy-driven rail system program
  - identify packages of investment projects (institutional changes, new operations strategies, and infrastructure capacity improvements)
  - Analyze benefits and costs of several specific alternative investments as case studies
- **CS with team**
- **Tech memo detailing policy options and project investment packages**

# Task 9 – State-Owned Rail Asset Management Plan

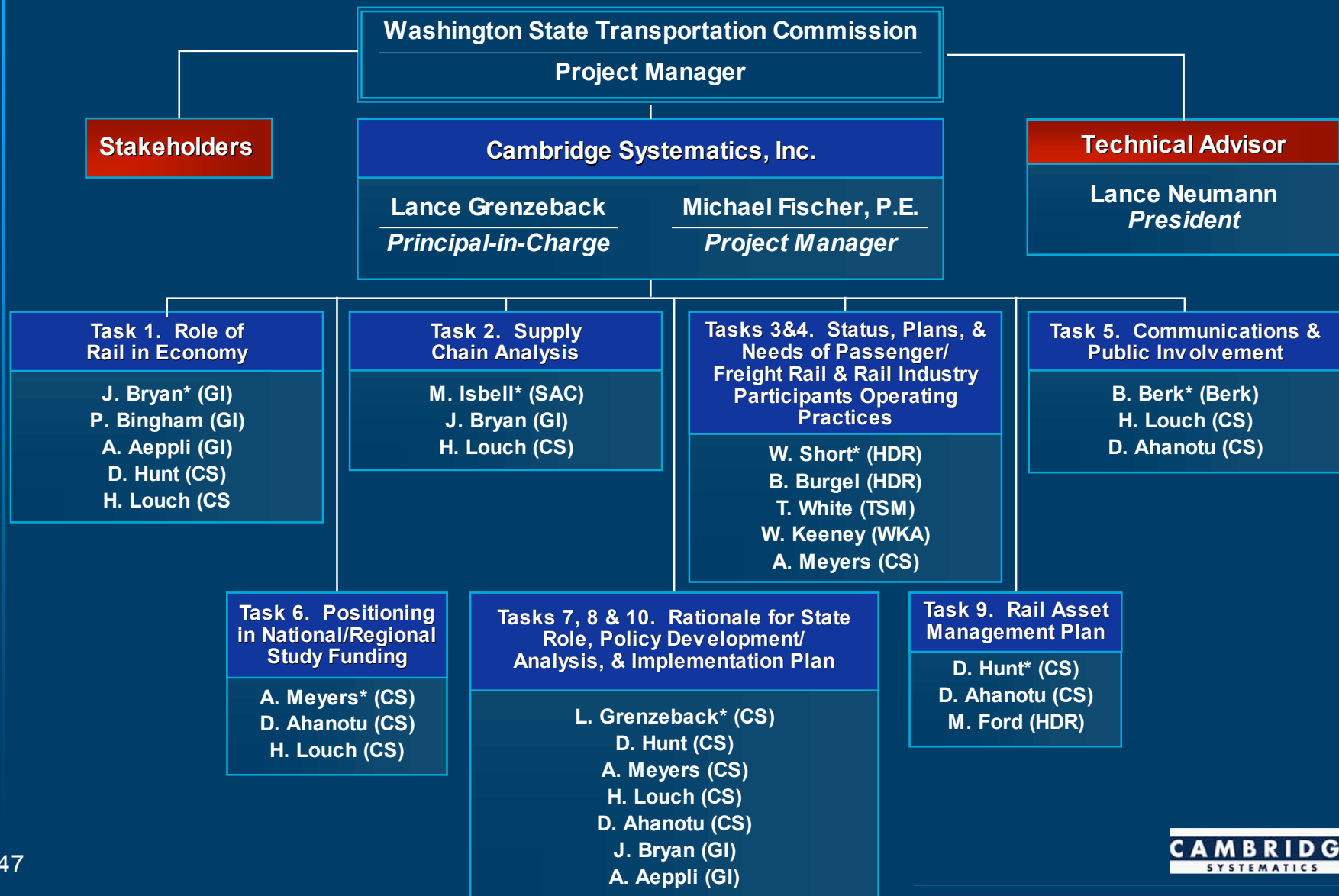
- **Develop a rail asset management plan for rail rights-of-way, lines, and equipment owned by Washington State**
  - Evaluate Washington's existing rail passenger and freight programs, with particular attention to the short-line program
  - Compare Washington's approach to that of other states
  - Develop a business-based asset management approach for State rail operation and investment, including vision, goals and strategies; asset management strategies; and strategies for financial sustainability
- **CS and HDR**
- **Asset management plan**

# **Task 10 – Summary Recommendations and Plans**

## **Task 10.1 – Analytical Plan, Task 10.2 – Investment Plan, and Task 10.3 – Rail Operations Forum**

- **Report clear, comprehensive, and practical recommendations for consideration by the Transportation Commission, rail-system stakeholders, and Washington State communities**
  - **Analytical plan setting out a methodology for determining when public sector investment is appropriate and defensible**
  - **Public sector investment plan spelling out programs and projects – along with their benefits, costs, and risks – to improve freight-rail and passenger-rail capacity, and**
  - **Recommendations for a rail operations forum to convene a continuing public-private dialogue to improve rail system operations and address future rail system needs and issues**
- **CS and team**

# CS Team Organizational Chart





# Statewide Rail Capacity and System Needs Study

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